

WHAT IS CLAIMED IS:

1 1. A smart memory device for use in a printer
2 comprising:
3 a standard memory module connector adapted for interface
4 of a plurality of electrical leads with a memory module
5 socket;
6 a controllable switch having a first set of leads
7 connected to said plurality of electrical leads of said
8 connector, a second set of leads and a third set of leads,
9 said controllable switch selectively connecting said first set
10 of leads to either said second set of leads or to said third
11 set of leads;
12 a memory connected to said second set of leads of said
13 controllable switch; and
14 a digital signal processor connected to said third set of
15 lead of said controllable switch, said digital signal
16 processor programmed to render data stored in said memory into
17 printer specific raster image data and store said rendered
18 data in said memory.

1 2. The smart memory of claim 1, wherein:
2 said memory consists of a plurality of banks of dynamic
3 random access memory.

1 3. The smart memory of claim 1, further comprising:
2 a local memory connected to said digital signal processor
3 for temporary storage of data; and
4 a bus interface connecting said digital signal processor
5 and said local memory to said third leads of said controllable

6 switch, whereby data may be transferred from said memory to
7 said local memory and from said local memory to said memory.

1 4. The smart memory of claim 1, wherein:
2 said local memory consists of static random access
3 memory.

1 5. The smart memory of claim 1, wherein:
2 said standard memory module connector consists of a
3 single in line memory module connector.

1 6. The smart memory of claim 1, wherein:
2 said standard memory module connector consists of a dual
3 in line memory module connector.

1 7. A printer controller comprising:
2 a input port for receiving input print data;
3 an input first-in-first-out memory having an input
4 connected to said input port and an output;
5 an output first-in-first-out memory having an input and
6 an output;
7 an output port for outputting printer specific raster
8 image data to a print engine;
9 a memory module socket;
10 a smart memory module including
11 a standard memory module connector adapted for
12 interface of a plurality of electrical leads with said
13 memory module socket,
14 a controllable switch having a first set of leads
15 connected to said plurality of electrical leads of said

16 connector, a second set of leads and a third set of
17 leads, said controllable switch selectively connecting
18 said first set of leads to either said second set of
19 leads or to said third set of leads,
20 a memory connected to said second set of leads of
21 said controllable switch, and
22 a digital signal processor connected to said third
23 set of lead of said controllable switch, said digital
24 signal processor programmed to render data stored in said
25 memory into printer specific raster image data and store
26 said rendered data in said memory; and
27 a data processor connected to said input first-in-first-
28 out memory, to said output first-in-first-out memory and to
29 said memory module socket, said data processor programmed to
30 transfer data out of said input first-in-first-out
31 memory via said output to said smart memory module,
32 interpret print data into a display list equivalent
33 and store the display list equivalent in said smart
34 memory module, and
35 transfer data rendered by said smart memory module
36 to said input of said output first-in-first-out memory.

1 8. The printer controller of claim 7, wherein:
2 said memory consists of a plurality of banks of dynamic
3 random access memory.

1 9. The printer controller of claim 7, further
2 comprising:
3 a local memory connected to said digital signal processor
4 for temporary storage of data; and

5 a bus interface connecting said digital signal processor
6 and said local memory to said third leads of said controllable
7 switch, whereby data may be transferred from said memory to
8 said local memory and from said local memory to said memory.

1 10. The printer controller of claim 7, wherein:
2 said local memory consists of static random access
3 memory.

1 11. The printer controller of claim 7, wherein:
2 said standard memory module connector consists of a
3 single in line memory module connector.

1 12. The printer controller of claim 7, wherein:
2 said standard memory module connector consists of a dual
3 in line memory module connector.